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TITLE: Network based distributed PBX system

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INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Baratz; Yaron	Tel Aviv			ILX
Budin; Nachum	Herzlia			ILX
Avimor; Jacob	Tel Aviv			ILX

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CLAIMS:

What is claimed is:

1. A personal computer based private branch exchange system distributed across a packet based network, comprising:

a plurality of telephony clients coupled to said network, each telephone client coupled to said network via a network interface card and adapted to interface to a standard analog telephone set;

at least one telephony server coupled to said network, said telephony server for providing centralized call switching capabilities to said plurality telephony clients, communications within said system realized through the transfer of packets over said network wherein said packets contain voice data, said packets containing voice data originating within said system having a priority equal to packets containing non-voice data on said network, said at least one telephony server operative to provide call setup, status monitoring and tear down functions for calls placed by said plurality of telephony clients; and

a system administrator coupled to said network said system administrator for providing management and administration capabilities to said system.

2. The system according to claim 1, wherein each said at least one telephony server comprises at least one telephony server module installed in a host computer, said telephony server module interfacing telephone lines provided from a telephone central office to said system.

3. The system according to claim 1, further comprising a remote subscriber interface module for coupling regular a telephone sets to said network without requiring analog personal computer host for operation of said remote subscriber interface module.

4. The system according to claim 1, wherein a predetermined number of said plurality of telephony clients are grouped together to form a segment, a plurality of segments coupled together to form said network, a network routing device for connecting said plurality of segments to each other.

5. The system according to claim 1, further comprising a telephony client module adapted to be installed in a host computer, said telephony client module for

interfacing a regular analog telephone set to said system, said telephone client module comprising:

an analog telephone set interface for providing a standard analog telephone interface between said regular analog telephone set and said telephony client module;

a codec coupled to said analog telephone set interface, said codec for converting analog voice data from said analog telephone set interface into digital voice data, said codec for converting received digital voice data into analog voice data and outputting said converted analog voice data to said analog telephone set interface;

a processor coupled to said codec, said processor for receiving said digital voice data output by said codec and forming packets of voice data therefrom, said packets of voice data having a priority equal to that of packets containing non-voice data on said network; and

a host interface coupled to said analog telephone set interface and said processor, said host interface for controlling said analog telephone set interface and for sending and receiving said packets of voice data to and from said host compute.

6. The telephony client module according to claim 5, further comprising an interface for coupling an external telephone line to said telephony client module.

7. The telephony client module according to claim 5, further comprising an interface for coupling a microphone and speaker to said telephony client module.

8. The system according to claim 1, further comprising a telephony server module adapted to be installed in a host computer, said telephone server module for interfacing a plurality of external telephone lines, such as from a public switched telephone network, to a network based distributed private branch exchange, said telephony server module comprising:

a plurality of telephone network interfaces, each said telephone network interface coupled to one of said external telephone lines, said telephone network interface for interfacing said external telephone lines to said telephony server module;

a processor for receiving voice data output by said plurality of telephone network interface and forming packets of voice data therefrom, said packets of voice data having a priority equal with that of packets containing non-voice data on said network; and

a host interface coupled to each of said telephone network interfaces and said processor, said host interface for controlling said plurality of telephone network interfaces and for sending said packets of voice data to said host computer.

9. The telephony server module according to claim 8, further comprising an external bus interface for coupling an external communication device to said telephony server module.

10. The system according to claim 8, further comprising a plurality of codecs, each codec coupled to one of said telephone network interfaces, each codec for converting analog voice data, output from said telephone network interface, into digital voice data, each codec for converting received digital voice data into analog voice data and outputting said converted analog voice data to said telephone network interface.

11. The system according to claim 1, further comprising billing means for tracking telephone call related data.

12. The system according to claim 11, wherein the billing means tracks telephone call related data selected from the group consisting of telephone usage, call times and call costs.

13. The system according to claim 1, further comprising interactive voice means for routing incoming calls to internal extensions in response to user replies to automated outgoing messages from said system.

14. The system according to claim 1, further comprising automatic call distribution means for routing an incoming call in accordance with call related data transmitted by the central office.

15. The system according to claim 1, further comprising automatic message distribution means for automatically dialing telephone numbers within one or more lists stored therein.

16. The system according to claim 1, further comprising voice mail means operative to permit callers to leave voice messages when called parties are not available, said voice mail means providing answering machine services to said plurality of telephone clients.

17. A method of communicating voice information across a network based distributed private branch exchange system from a source to a destination for the duration of a call, comprising the steps of:

converting analog voice data received at said source into digital voice data;

packetizing said digital voice data into a plurality of voice packets;

placing said plurality of voice packets onto said network wherein said voice packets have equal priority with non-voice packet on said network;

depacketizing said plurality of voice packets received at said destination;

converting said digital voice data back into said analog voice data; and

providing centralized call management for effecting call setup status monitoring and tear down of calls between the source and the destination.

18. A personal computer based private branch exchange system distributed across a packet based network, comprising:

a plurality of telephony clients coupled to said network, each telephone client coupled to said network via a network interface card and adapted to interface to a standard analog telephone set;

at least one telephony server module coupled to at least one external telephone line provided from a central office and installed in a second host computer, said second host computer coupled to said network;

at least one telephony server coupled to said network, said telephony server for providing centralized call switching capabilities to add plurality of telephony clients, communications within said system realized through the transfer of packets over said network wherein said packets contain voice data, said packets containing voice data originating within said system having a priority equal to packets containing non-voice data on said network, said at least one telephony server operative to provide call setup, status monitoring and tear down functions for calls placed by said plurality of telephony clients; and

a telephone administrator coupled to said network, said system administrator for providing management and administration capabilities to said system.

19. The system according to claim 18, further comprising a remote subscriber interface module for coupling a standard analog telephone set to said network without requiring a personal computer host for operation of said remote subscriber interface module.